TOPIC 1 Review

1. The number of heartbeats of a person at rest in one hour, to the nearest order of magnitude is
   1. 101.
   2. 102.
   3. 103.
   4. 105.
2. When a force F of (10.0 ± 0.2) N is applied to a mass m of (2.0 ± 0.1) kg, the percentage uncertainty attached to the value of the calculated acceleration is
   1. 2 %.
   2. 5 %.
   3. 7 %.
   4. 10 %.
3. Which of the following contains only **fundamental** units?

|  |  |  |
| --- | --- | --- |
| Ampere | Newton | Second |
| Volt | Second | Kelvin |
| Mole | Ampere | Kilogram |
| Kilogram | Meter | Tesla |

A

B

C

D

1. Both random and systematic errors are present in the measurement of a particular quantity. What changes, if any, would repeated measurements of this quantity have on the random and systematic errors?

|  |  |
| --- | --- |
| **Random** | **Systematic** |
| reduced | reduced |
| reduced | unchanged |
| unchanged | reduced |
| unchanged | unchanged |

A

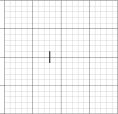
B

C

D

5. The sides of a cube are each of length 1.00 m. Each side is measured with an uncertainty of 2%. The absolute uncertainty in the volume of the cube is

* 1. ± 0.02 m3.
  2. ± 0.06 m3.
  3. ± 0.2 m3.
  4. ± 0.6 m3.

1. The grid below shows one data point and its associated error bar on a graph. The *x-axis* is not shown.

Which of the following is the correct statement of the *y-value* of the data point, with its uncertainty?

* 1. 3 ± 0.2
  2. 3.0 ± 0.2
  3. 3.0 ± 0.20
  4. 3.00 ± 0.20